

shallow water bodies of Uttar Pradesh and Bihar. We have recorded this species from Western Ghats for the first time.

Remarks: *Heteropneustes microps* differs from the only other known species, *H. fossilis*, in having a long-based anal fin which is confluent with the caudal fin. There is no distinct notch between anal and caudal fins (Fig. 1B), whereas in *H. fossilis* (Fig. 1A) anal and caudal fins are separated by a distinct notch.

ACKNOWLEDGEMENTS

Two of the authors J. Antony Johnson (8/297(9)/98-EMR-I-SPS) and A. Manimekalan (9/652(7)/97-EMR-I-SPS) are grateful to Council of Scientific and Industrial Research (CSIR),

New Delhi, for Senior Research Fellowship. We are thankful to Dr. K. Rema Devi, Zoological Survey of India, Southern Regional Station, Chennai, for her kind co-operation.

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19. ADDITIONS TO THE FISH FAUNA OF PAMBAR RIVER, KERALA

Pambar river is one of the three east flowing rivers in Kerala. As a part of the studies on the hill-stream fishes along the eastern side of the Western Ghats, a survey was conducted in the Pambar river and its tributaries in February, 1998. Earlier, Easa and Shaji (1996) studied the freshwater fishes of the Pambar river in the Chinnar Wildlife Sanctuary area. They listed

eleven species from the sanctuary part of Pambar river. In the present study, however, more species were collected from the Sanctuary area itself and other parts of the river (Tables 1 & 2).

The present survey indicated that fifteen species belonging to three families were additions to the fish fauna of Pambar river. Thus the total number of species has increased to 26.

TABLE 1
ADDITIONAL SPECIES COLLECTED FROM THE
CHINNAR WILDLIFE SANCTUARY AREA OF
THE RIVER

No. Species	Endemism	Status
Family: Cyprinidae		
Sub-family: Cyprininae		
1. <i>Puntius melanampyx</i> Day	EWG	Common
Sub-family: Rasborinae		
2. <i>Esomus danricus</i> (Ham. Buch.)		Rare
3. <i>Danio malabaricus</i> (Jerdon)		Common
4. <i>Danio aequipinnatus</i> (McClelland)		Common
Sub-family: Garrinae		
5. <i>Garra hughi</i> Silas	EWG	Very rare
6. <i>Horallabiosa joshuai</i> Silas	EWG	Very rare
Family: Homalopteridae		
Sub-family: Nemacheilinae		
7. <i>Nemacheilus monilis</i> Hora	EWG	Very rare
8. <i>Nemacheilus semiarmatus</i> Day	EWG	Rare
9. <i>Nemacheilus triangularis</i> Day	EWG	Common

EWG - Endemic to Western Ghats

TABLE 2
ADDITIONAL SPECIES OUTSIDE THE
SANCTUARY AREA, FROM THE TRIBUTARIES
OF THE RIVER

No. Species	Endemism	Status
Family: Cyprinidae		
Sub-family: Cyprininae		
1. <i>Cyprinus carpio communis</i> Linn.		Introduced
2. <i>Catla catla</i> Val.		Introduced
3. <i>Puntius aerulius</i> (Jerdon)	EWG	Common
4. <i>Puntius filamentosus</i> (Val.)	EWG	Common
5. <i>Puntius ticto ticto</i> (Ham. - Buch.)		Common
Family: Salmonidae		
6. <i>Salmo gairdnerii gairdnerii</i> Richardson		Rare & Introduced

EWG - Endemic to Western Ghats

The number of additional species now reach 15, of which 8 species are endemic to the Western Ghats. *Puntius melanampyx*, *P. filamentosus*, *P. aerulius*, *P. ticto ticto*, *Danio aequipinnatus*, *D. malabaricus* and *Nemacheilus triangularis* are widely distributed in this river.

Nemacheilus monilis and *Garra hughi* are a second report from Kerala. Easa *et al.* (1997) recorded it from Bhavani river, Kerala. This loach can be easily distinguished from other species by its distinct moniliform black band along the lateral line from tip of snout to base of caudal fin. Type locality of *G. hughi* is lower Vauguvarrai estate, Travancore, Kerala. Since then there has not been any report on its occurrence in any river. According to the original description by Silas, in *G. hughi* scales were absent on the mid-dorsal streak. But in our collections, interestingly, all specimens carry scales on the mid-dorsal streak. This could be an important variation in this species.

N. semiarmatus is the first report from south of Palghat gap in Kerala. The rainbow trout, *Salmo gairdnerii* was reported only from Eravikulam stream, a tributary of Pambar river. In Kerala, this is the only area where trout have established *Catla catla* and *Cyprinus carpio communis* are the introduced species collected from the check-dam constructed at Kanthallor area. Except at the origin of Eravikulam, the temperature of all other collection localities ranged between 21° - 23.9° C. The temperature of Eravikulam stream ranged from 13° - 16.8° C.

Silas (1953) described a new genus and species, *Horallabiosa joshuai* from the Western Ghats of Tirunelveli district, Tamil Nadu, from the head-waters of the Tamiraparni river at Singampatty. For the first time in Kerala, we have collected eight specimens of *Horallabiosa joshuai* from Chinnar Wildlife Sanctuary area of Pambar river. This species is characterised by a post-labial callus structure in the mental region. It is a small hill stream fish, the body is moderately elongate and slightly compressed. Its dorsal profile is more or less convex and the ventral surface is flattened. The snout is bluntly rounded and smooth without any trace of tubercles.

ACKNOWLEDGEMENTS

May 30, 1998

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We are grateful to Dr. K. Rema Devi, Scientist, ZSI, Southern Regional Station, Chennai, for confirming identification of the species.

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20. DISTRIBUTION OF FRESHWATER FISHES IN THE UPPALA RIVER, KASARGOD DISTRICT, KERALA

Distribution of freshwater fish fauna of Northern Kerala, north of Palghat Gap, was studied by various workers in the past (Rajan 1955, Mukerji 1931, Remadevi and Indra 1986 and Easa and Shaji 1997). However, there was no authentic record of the fish fauna of the rivers flowing through Kasargod dist, Kerala till the recent study conducted by Biju *et al.* (1999) in the Mancheswaram river, Kasargod district.

The Uppala river was surveyed by the authors in November, 1997. This river originates from the Veerakamba hills in Karnataka State at an altitude of 150 m above msl, it flows southwards about 7 km, then west about 13 km through Karnataka State. The river then flows 6 km through the Karnataka-Kerala border, enters Kasargod district, and flows in a southwest direction. After deviating in various directions the river discharges into the backwaters near Uppala, bordering the Arabian Sea. Mancheswaram river joins the same backwaters at the right bank. This river has a length of 50 km and a catchment area of 250 sq. km of which 174 sq. km belong to Karnataka State. The area under Karnataka State was also surveyed so as to have a complete picture of the distribution of fishes.

Upper parts of this river dry up within a month after the end of the southwest monsoon, so that all the fishes in this river migrate to the lower reaches. The main substratum of the river has sand and pebbles in the upper parts, while in the lower regions the bottom is muddy or sandy. Collections were made by using cast net, gill net and scoop net of varying mesh size. The list of species collected from the river is given below.

Family - Anguillidae

1. *Anguilla bengalensis bengalensis* (Gray)

Family - Cyprinidae

Subfamily - Cyprininae

2. *Puntius amphibius* (Val.)
3. *P. melanampyx* Day
4. *P. filamentosus* (Val.)
5. *P. vittatus* Day

Subfamily - Rasborinae

6. *Danio aequipinnatus* (McClelland)
7. *D. malabaricus* (Jerdon)
8. *Parluciosoma daniconius* (Ham. Buch.)

Subfamily - Garrinae

9. *Garra mullya* (Sykes)